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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,099	09/03/2003	Yoshiaki Tanaka	10844-31US (203055 (C-1))	4884
570	7590	05/09/2006	EXAMINER	
AKIN GUMP STRAUSS HAUER & FELD L.L.P. ONE COMMERCE SQUARE 2005 MARKET STREET, SUITE 2200 PHILADELPHIA, PA 19103			ALEXANDER, MICHAEL P	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/654,099

Applicant(s)

TANAKA, YOSHIKI

Examiner

Michael P. Alexander

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) 19-22 and 39-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 23-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

Claim(s) 1-58 is/are pending.

#### ***Election/Restrictions***

Applicant's election of the cylindrical case type fuse in the reply filed on 24 March 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 19-22 and 39-58 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 24 March 2006.

#### ***Priority***

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

#### ***Claim Objections***

Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 2 expands the scope of claim 1 because claim 1 excludes the presence of Ag, Au, Cu, etc.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-18 and 23-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3, which is representative of all the claims on this issue, states: an alloy type thermal fuse comprising a thermal fuse element wherein 0.1 to 3.5 weight parts of one, two or more elements selected from the group consisting of Ag, Au, Cu, Ni, Pd, Pt, Sb, Ga, and Ge are added to 100 weight parts of an an alloy composition in which Sn is greater than 46 weight % and less than or equal to 70 weight %, Bi is at least 1 weight % and less than or equal to 12 weight %, and In is at least 18 weight % and less than 48 weight %, and **wherein the composition does not intentionally contain an element which is harmful to a living body.**

The Examiner asserts one of ordinary skill in the art would not be able determine the scope which elements are intended to be excluded from the composition as being harmful to a living body. As evidence, the Examiner has attached four published references that discuss toxic effects of Sb, Cu, Ni and Ag in living bodies. The Examiner notes that claim 3 specifically includes Sb, Cu, Ni and Ag in the claimed composition despite the known toxic effects of the elements in living bodies.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Gonya et al. (US 5,344,607).

Regarding claim 1, Gonya teaches (col. 4 line 36) a material having an alloy composition consisting of, by weight percent: 70% Sn, 10% Bi and 20% In, which anticipates the claimed invention. The recitation “for a thermal fuse element” is a recitation of intended use and will be given no patentable weight. See MPEP 2111.02 II.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi (JP 2000-126890).

Regarding claim 2, Yamaguchi teaches (0010, 0012, 0013) materials having amounts of Sn, Bi and In, which overlap with the claimed ranges, and also amounts of Ag, Cu or Sb, which overlap with the claimed ranges, which is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to select the desired amounts of Sn, Bi, In, Ag, Cu and Sb from the ranges disclosed by Yamaguchi because Yamaguchi teaches the same utility throughout the disclosed ranges. Additionally, the recitation "for a thermal fuse element" is a recitation of intended use and will be given no patentable weight. See MPEP 2111.02 II.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (JP 2003-082430).

Regarding claims 1-6, Hara teaches (abstract) an alloy type thermal fuse consisting of amount of Bi, In and Sn and another alloy having amounts of Bi, In, Sn and Cu which overlaps with the claimed invention, which is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to select the desired amounts of the respective elements from the ranges of Hara because Hara teaches the same utility throughout the disclosed ranges. Furthermore, the alloy of Hara would inherently contain inevitable impurities, and Hara does not necessitate the addition of any other alloying elements.

Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saruwatari (JP11-40025-A) in view of Lee et al. (Replacement of zinc by cadmium in marine phytoplankton)

Regarding claim(s) 3, Saruwatari teaches (0009) an alloy type thermal fuse wherein including a material having an alloy composition in which Sn is 35 to 48 weight percent, Bi is 0.3 to 6 weight percent and In is about 26 to about 55 weight percent. The disclosed ranges of Sn, Bi and In overlap with the claimed ranges of Sn, Bi and In, which is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to select the claimed amount of Sn, Bi and In from the ranges of Sn, Bi and In disclosed by Saruwatari because Saruwatari teaches the same utility throughout the disclosed ranges.

Still regarding claim 3, the Examiner asserts that the cadmium in the alloy of Saruwatari would inherently be non-harmful to a living body (i.e. marine phytoplankton) as evidenced by Lee et al.

Regarding claim 5, the Examiner asserts that the fuse element would inherently contain inevitable impurities.

Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saruwatari in view of Lee et al. ~~as applied to claims 3 and 5 above,~~ and further in view of Tanaka (JP 2001-266724).

Regarding claim(s) 4 and 6, Saruwatari do not specify adding 0.1 to 3.5 weight parts of Ag to the alloys composition of claim 1. However, Tanaka teaches (0014) adding 0.5-3.5 weight parts of Ag to a substantially similar thermal fuse composition in

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order to lower the resistivity. It would have been obvious to one of ordinary skill in the art to modify the material of Saruwatari by adding 0.5-3.5 weight parts of Ag in order to lower the resistivity as taught by Tanaka.

Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saruwatari in view of Lee or Saruwatari in view of Lee and Tanaka as applied to claims 3-6 above, and further in view of JP 11306940 A.

Regarding claims 7-10, Saruwatari teaches (0002) that the fuse element is connected between lead conductors but does not specify that at least a portion of each of said lead conductors would be covered with an Sn or Ag film. However, JP 11306940 A teaches (abstract) applying a Sn or Ag film to the surface of lead conductors in order to improve the bonding strength of the lead conductors. It would have been obvious to one of ordinary skill in the art to modify the method of the cited prior art by applying a Sn or Ag film to the surface of the lead conductors in order to improve the bonding strength of the lead conductors as taught by JP 11306940 A.

Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saruwatari in view of Lee or Saruwatari in view of Lee and Tanaka or Saruwatari in view of Lee and JP 11306940A or Saruwatari in view of Lee, Tanaka and JP 11306940A as applied to claims 3-10 above, and further in view of Ishioka (JP403110732A).

Regarding claims 11-18, Saruwatari teaches (0010) that lead conductors are bonded to ends of the fuse element, respectively, a flux is applied to said fuse element, said flux-applied fused element is passed through a ceramic tube (i.e. cylindrical case), and gaps between ends of the ceramic tubing and the lead conductors are sealingly



closed. Saruwatari does not specify the ends of the lead conductors have a disk-like shape, and ends of the fuse element are bonded to front faces of the disks.

Still regarding claims 11-18, Ishioka teaches (abstract) providing lead conductors with a disk-like shape at the ends of the lead conductors and bonding the fuse elements to the front faces of the disks in order to prevent flux from adhering to the ends of the cylindrical case and to achieve quick separation when the fuse is activated. It would have been obvious to one of ordinary skill in the art to modify the method of the cited prior art by providing lead conductors with a disk-like shape at the ends of the lead conductors and bonding the fuse elements to the front faces of the disks in order to prevent flux from adhering to the ends of the cylindrical case and to achieve quick separation when the fuse is activated as taught by Ishioka.

Claims 23-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saruwatari in view of Lee or Saruwatari in view of Lee, Tanaka, JP 11306940A, and/or Ishioka as applied to claims 3-18 above, and further in view of Cole (GB 2028608 A).

Regarding claims 23-38, the aforementioned mentioned references do not specify providing a heating element for fusing off said fuse element. However, Cole teaches (abstract) providing a resistor to blow a thermal fuse in order to terminate heating in a heating circuit for an electric blanket. It would have been obvious to one of ordinary skill in the art to modify the aforementioned reference by providing a resistor to blow a thermal fuse in order to terminate heating in a heating circuit for an electric blanket as taught by Cole.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Alexander whose telephone number is 571-272-8558. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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